

Syllables and Syllabaries: What Writing Systems Tell Us about Syllable Structure

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I. Theoretical Preliminaries: What *might* syllabaries tell us about syllable structure?

“Do syllables exist? ... What is the internal structure of the syllable?”

–CUNY Conference on the Syllable Call for Papers

“[O]ne crucial test of a theory of linguistic structure is whether it can be integrated into a theory of processing.” (Jackendoff 1983, p. 5)

Writing systems are *by their nature* **theories of processing**.

- Becoming literate requires becoming consciously aware of (some of) the linguistic structures of one’s language (Mattingly 1972, Gombert 1992, Seymour 2006).
- Inventing a writing system entails encoding (some of) the linguistic structures of one’s language.

Written representation → explicit awareness → implicit “reality”

- Invented writing systems tend to be syllabaries (or logosyllabaries), not alphabets (Daniels 1996).
- Explicit awareness of syllables developmentally precedes phonemic awareness (Lieberman et al. 1974, Goswami 2006).
- Syllabaries are easy to learn; alphabets are difficult (Gleitman & Rozin 1973, Taylor & Taylor 1995).

Syllables look more “real” than segments, despite their slow acceptance into early generative phonology (cf. lack of syllables in SPE).

II. The Theoretical Hurdle

Syllabaries don’t look much like syllables. (Considered moraic in Rogers 2005, et al.)

E.g. Linear B vs. Greek syllables (Chadwick 1987).

⊕ϕ	ἰριϕ	ϕἄ
ka-ko	ti-ri-po	ko-wo
kha(l)ko(s)	tripo(s)	ko(r)wo(s)
“bronze”	“tripod”	“boy”

What then, if anything, do syllabaries tell us about syllables?

III. Scope of the data

Pretheoretic definition of a syllabary: a phonologically-based writing system that (in some sizable portion of the signary) does not represent individual segments, but rather some **string of segments**.

Does **not** include

- Logographic systems, which are morphologically based. E.g. Chinese characters; parts of Mayan hieroglyphs and cuneiform
- Non-linear alphabets, in which individual segments are represented, but are graphically grouped together in some way, e.g.
 - *Akṣara*-based systems of southern Asia and Ethiopia
 - Cree “syllabics”
 - Korean han’gŭl
- Consonantal Alphabets, in which consonant segments are represented, but either all vowels or some vowels are omitted (E.g. Phoenician, Aramaic, Hebrew, Syriac, Arabic)

IV. The Evidence

A. Strings or syllables?

Akkadian cuneiform (logosyllabary): phonological sign types include V, CV, CVC, VC.

Given string CVCV, written form is $S_{CV}-S_{CV}$, $*S_{CVC}-S_V$, except at morpheme boundary, or where “V” is actually ?V (Cooper 1996):

parāsu **pa-ra-su, *par-as-u** “to decide”

B. Syllabic membership

Akkadian again:

Many CV_iC syllables are written $S_{CV_i}-S_{V_iC}$:

iprus **ip-ru-us** “he decided”

Mayan (logosyllabary): phonological signs are V, CV (Coe & Van Stone 2005).

pakal **pa-ka-la** “shield”
pitz **pi-tzi** “play ball”
tzul **tzu-lu** “dog”

Change in vowel adds information about that nucleus:

baak **ba-ki** “prisoner”
muut **mu-ti** “bird, omen”
ahk **a-ku** “turtle”

Note: this reverses segmental linear order as perceived by alphabet users, but segmental order may be overrated, both acoustically (Liberman 1970) and as represented in syllabic signs.

Cypriot (Greek): phonological signs are V, CV, a few CCV with ksV (Woodard 1997).

Spelling rules:

- Word-final consonants (-s, -n, -r) are usually spelled with an epenthetic -e (but occasionally final -s and -n are omitted).

gar	ka-re	“for”
kasignētōs	ka-si-ke-ne-to-se	“brothers,” acc.
mist ^h ōn	mi-si-to-ne	“of a fee”

- Geminates are simplified.

Apollōni	a-po-lo-ni	“for Apollo”
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- Before a stop or /s/, nasals are omitted.

panta	pa-ta	“all”
iōnsi	i-o-si	“they should remain”

- Word-initial clusters are spelled with the following vowel.

Stasandrō	sa-ta-sa-to-ro	man’s name, gen.
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- Otherwise clusters are spelled with the following vowel if of equal or rising sonority, or with the preceding vowel if of falling sonority.

patri	pa-ti-ri	“to the father”
memnamenoi	me-ma-na-me-no-i	“having remembered”
argurō	a-ra-ku-ro	“of silver”
katestase	ka-te-se-ta-se	“s/he placed”

Debate as to whether syllable-sensitive or merely sonority-sensitive (Woodard 1997), **but this involves identifying consonants with vowels in a sonority-driven manner**, i.e. **syllabification**, even if a few differences from other uses of syllabification (e.g. metrical weight).

C. Onset-Coda asymmetry

Linear B (Mycenaean Greek): Signs are V, CV, a few CCV (Chadwick 1967, Hooker 1980, Woodard 1997).

Traditional story (Chadwick, Hooker): *onset* consonants are written, *coda* consonants are not; *s* before stop is not written.

Sonority story (Woodard):

- Final consonants are not written.
- Consonants are written if the following consonant is of equal or higher sonority (with the following vowel, unless there isn’t one).

- Consonants are omitted if the following consonant is of lower sonority.

sperma	pe-ma	ᄉᄃ	“seed, grain”
tripōs	ti-ri-po	ᄃᄃᄃ	“tripod”
Phaistos	pa-i-to	ᄃᄃᄃ	place name
anampukes	a-na-pu-ke	ᄃᄃᄃᄃ	“without headbands”
Amnisos	a-mi-ni-so	ᄃᄃᄃᄃ	place name
Knossos	ko-no-so	ᄃᄃᄃᄃ	place name
ksun	ku-su	ᄃᄃ	“together with”
potnia	po-ti-ni-a	ᄃᄃᄃᄃ	“lady”

(E.g.s from Hooker)

Consonants are associated with vowels (or deleted) in a sonority-driven manner. Ones that associate forward are written, those that associate backward are not.¹ i.e. **onsets** are preferred over **codas**. /s/ before stop does not count as an onset, not surprisingly.

Matching of syllables to signs is TETU (McCarthy & Prince 2004).

D. Extrasyllabicity of /s/

Cherokee: signs are V, CV, /s/ (Holmes & Smith 1976, Scancarelli 1996).

kaʔk ^w o:ki	ga-li-quo-gi	ᄃᄃᄃᄃ	“seven”
kt ^h o:ʔa	gv-do-a	ᄃᄃᄃ	“it is hanging (of a long object)”
t ^h aʔli	ta-li	ᄃᄃ	“two”

But:

sko:hi	s-go-hi	ᄃᄃᄃ	“ten”
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Allowing also

hiʔwi:ja:s	hi-yv-wi-ya-s	ᄃᄃᄃᄃᄃᄃ	“Are you an Indian?”
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(E.g.s from Scancarelli)

E. Moraic structure

Some “syllabaries” actually are **moraic**.

Japanese kana: signs are V, CV, N (coda nasal), Gem (=first member of geminate) (Hadamitzky & Spahn 1981).

yūgata	yu-u-ga-ta	ゆうがた	“evening”
kirei	ki-re-i	きれい	“pretty”

¹ There are two possible exceptions: wanaks (“king”) is written wa-na-ka, and ait^hio^wk^ws (man’s name) is written a₃-ti-jo-ʔo. However, note wa-na-ka-to and wa-na-ka-te (alongside wa-na-ke-te) for genitive wanaktos and dative wanaktei suggesting an alternative pronunciation or at least spelling exceptionality for this word. Also, a₃-ti-jo-ʔo could be derived by vocalization of the offglide (there is no qu sign). However, if these count as written coda consonants, then they identify their nuclear vowel, as in Cypriot.

Warning: Beware of orthographic bias in phonological theory! (E.g. alphabetic bias → omission of syllables in early generative phonology.)

Other writing systems provide evidence for smaller phonological units (Gnanadesikan in press):

- nucleus vs. margin (*akṣara* systems)
- segments (alphabets generally)
- features (han'gūl and others)

But not larger phonological units (why?):

- phonological feet

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